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FROM STRENGTH TO STRENGTH

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MESSAGE FROM OUTGOING PRESIDENT

From strength to strength

This August, NGC commemorated its 49th anniversary. For me personally as President, the landmark also coincided with the end of my eight-year tenure at the helm of this great company.

As would be expected, the occasion of reaching this milestone – both corporate and personal – presented an opportunity for reflection. From the company's perspective, looking back from 49, we have the benefit of hindsight to see how every individual achievement fit into a larger narrative of impact. We can now appreciate how every decision, every sacrifice, every day of work helped create a legacy, usher in a new age for local energy, and underwrite a period of unprecedented national development.

From a personal standpoint, looking back on the journey of the past eight years, I am left with an abiding pride and deep sense of accomplishment, having helped steer this company during a particularly disruptive and transformative era in its history. I am proud to say that with all hands on deck, we have emerged from a turbulent decade far more resilient, better resourced and sufficiently prepared to headline our country's next chapter in energy. I congratulate and thank all who made it possible.

That said, looking *forward* from 49 can be a more tentative exercise, as the future naturally comes with some uncertainty. Our industry is evolving; political and cultural factors are reshaping our societies; and our environment is changing in

Mark Loquan
Outgoing President

fundamental ways. Uncertainty can sometimes make it difficult for us to step confidently forward. However, the benefit of having a 49-year history to reflect upon is that we have unique insights into how to navigate change and uncertainty.

From our history, we have learnt the importance of agility, flexibility and having the courage to innovate. We have learnt the importance of embracing change, and the value of our human capital. Importantly, we have learnt that every new chapter brings new opportunities for us to make an impact, and to grow from strength to strength.

The theme of this issue of *GASCO News* invites reflection in both directions – backward and forward. In this edition, we tell our life story as a company through a series of critical historical milestones – the pivotal moments that marked our growth. From there, we zone in on the core strength of company – our natural gas business – and highlight some of the steps we have been taking in recent years to reinforce it.

Where our past strength has been rooted largely in natural gas, our future strength will derive from a now holistic focus on low-carbon energy. Energy efficiency (EE) – considered the first fuel of the energy transition – has been a keen pursuit of the NGC Group. We have several programmes underway targeting EE at the consumer level, but industrial EE is just as vital, as we discuss here. We also take a look at the possibilities and opportunities regarding wind energy, which has been identified as a high-potential resource for Trinidad and Tobago.

Through these and other stories, we explore what our company has done and the options we are contemplating to enable our growth from strength to strength. In inviting you, our readers, to explore with us, I also take the opportunity to thank you for your tremendous support over the years. It has been an honour preluding this journal during my time at NGC, and I hope that every issue has been as insightful for you as they have been rewarding for me. My very best wishes to all.

Mark Loquan

A MARK OF ENDURING IMPACT – NGC PAYS TRIBUTE TO MARK LOQUAN

NGC wishes to congratulate outgoing President Mark Loquan, who was named a recipient of the Order of the Republic of Trinidad and Tobago (ORTT) on September 24th 2024, for his contributions to local energy and the steelpan industry. Mr. Loquan's tenure came to an end in August 2024, after eight consequential years at the helm of the company.

Proudly displaying his ORTT award next to fellow recipient Professor Patrick Hosein (left)

CONTRIBUTIONS TO ENERGY

Mark Loquan joined NGC in 2016 as an accomplished industry veteran, with more than three and a half decades of experience. Mr. Loquan was already a seasoned leader, having served as the first local President of Hydro Agri Trinidad (now Yara Trinidad Ltd.) in 2002; President of Upstream Business Development for Angola/Sub-Saharan Africa at Yara International (2009); and CEO of Yara Pilbara in Australia (2012).

Prior to joining NGC, Mr. Loquan had several achievements to his name. During the 1980s, he worked alongside local professionals to help operationalise the country's first fully functional, digitally controlled process plant. He played a pivotal supporting role thereafter to local engineers, technicians and operators of the plant, thereby contributing to the subsequent growth of the ammonia and methanol plants on the Point Lisas Industrial Estate. At Yara Trinidad Limited, he was widely recognised for his work as Global Head of Supply Chain based in Norway, where he led the organisation in the use of e-auctions for everyday goods and services. He would later advocate for use of this procurement methodology by the government of Trinidad and Tobago.

While at Yara, Mr. Loquan also leveraged the company's agronomy insights to help build capacity in local agriculture. A notable programme saw technical tools developed by Yara's research centre being gifted to local farmers, to help with more efficient and cost-effective application of fertilisers.

During his career, Mr. Loquan became a founding member of the Point Lisas Energy Association (PLEA), through which he lobbied for collaboration on Health, Safety and Environmental performance among member companies. He oversaw the implementation of a standard industry tool for assessing the HSSE Management Systems of energy service providers, which would become the award-winning 'Safe To Work' programme of Trinidad and Tobago – STOW TT. Also through PLEA, he helped spearhead an initiative to develop a uniform basic safety awareness training course and assessment that would become a prerequisite for entry into downstream facilities, and central to the management of safety across the downstream sector.

Alongside his work to raise the safety standard of the industry, Mr. Loquan helped create international opportunities for local energy companies. During his postings abroad, he contributed to the Africa Energy Initiative, which sought to open doors for Trinidadian service exports and investments in Africa. This work continued upon his return to Trinidad and Tobago, when he assumed the role of a Director of the Energy Chamber, and collaborated with other industry executives to advance transformative energy initiatives. Among his legacy contributions in that role was his effort to champion the energy transition and sustainability in the domestic sector. He chaired the Decarbonisation Task Force at the Energy Chamber, advocated for the introduction of a PLEA energy transition sub-committee, and became a member of the National Commission on Sustainable Development.

CONTRIBUTIONS TO NGC

Arguably some of his most impactful work was delivered during his tenure at NGC. As the company's 7th President, Mr. Loquan led a process of transformation at the state enterprise. He oversaw and spearheaded several legacy projects, steered the company to organisational milestones, and led a pivotal repositioning of the company's business. He also saw the necessity of collaboration to overcome the challenges facing the country's energy sector, and became a vocal advocate for constant and open dialogue among all sector stakeholders. Among the most notable achievements under his stewardship were:

- **Reinforcement of NGC's safety culture and Asset Integrity Management (AIM)** – System, equipment and process improvements, as well as company-wide training interventions, helped NGC better align with international benchmarks for safety and AIM.
- **Contract negotiations and claims settlement** – Multiple upstream and downstream gas contracts were negotiated, and open claims against the company settled.
- **Closer collaboration along the value chain** - A proponent of strategic and systems-thinking, Mr. Loquan advocated for greater collaboration across the local energy sector, on issues such as safety and environment, supply management, gas optimisation and energy efficiency.

- **Molecular optimisation** – To help address a tighter gas supply scenario, Mr. Loquan lobbied for molecular optimisation, through more efficient use of gas in power generation and at the consumer level.

- **Advancement of cross-border gas deals** – Efforts to secure gas from external sources, notably Venezuela, were progressed through critical milestones.

- **Internationalisation of brand and business** – Mr. Loquan was instrumental in brokering partnership agreements with state entities in various countries - including Venezuela, Grenada, Ghana, Mozambique and China - allowing NGC to deepen and expand its role in the gas value chain. He also represented the company at many international conferences and industry events.

- **Technology upgrades** – Mr. Loquan advocated for greater integration of technology to streamline processes. The company initiated drone, satellite and infrared surveillance of its network, and undertook a massive business transformation programme to remove silos and make key customer processes and reporting more efficient.

- **Sustainability in focus** – NGC began to align its strategic objectives with global sustainability goals under Mr. Loquan's leadership. The company began producing annual Sustainability Reports and integrated sustainability into its culture, projects and key performance metrics.

- **Implementation of the Green Agenda** - Tied to sustainability was the introduction of a Green Agenda – a corporate focus on clean energy projects and investments, energy efficiency and carbon reduction mechanisms, such as a methane mitigation campaign and public education programmes.

- **Impact beyond energy** – Mr. Loquan sought to expand NGC's impact beyond energy, lobbying for collaboration and knowledge-sharing across state companies. He also oversaw the recalibration of NGC's Corporate Social Responsibility (CSR) portfolio to focus on sustainable national development.

CONTRIBUTIONS TO MUSIC

Just as recognised and impactful as his work in energy have been Mr. Loquan's achievements in the field of music. He is an award-winning music composer, songwriter, and documentary filmmaker. An avid and accomplished pannist, he is one of the leading composers for Panorama, with nearly 40 pieces composed for steelpan, 34 of which have been performed on the Panorama stage across all band categories. His music has global reach, with his lead sheets freely available via his website. His work in pan has won him awards both locally and internationally, including the COTT Pan Song of the Year and International Soca Awards.

Mr. Loquan is passionate about music literacy and education. He co-founded the Music Literacy Trust in 2004 – an entity dedicated to nurturing budding pannists, fostering musical education programmes, and preserving the legacies of pan luminaries. The Trust has awarded

dozens of scholarships to talented young pannists. He also pioneered educational products such as 'Pan In Education' (2004) and 'Pan in Education 2' (2011). More recently, he founded PanNotation – an online platform that focuses on the science, preservation, education, and future of the steelpan industry. Intent on growing the footprint of pan, Mr. Loquan was instrumental in the formation of steelpan groups and bands in Norway, Australia and Africa. Notably, he served as the musical director of Perth Pandemix, Australia's premier steelband.

He currently serves as the Chairman of the National Steering Committee for the development of a National Governance Framework for the Steelpan Industry.

Some of his other achievements in pan include:

- **Virtual Steelband 2** - composer for the project, which involved 300 participants from 11 countries including the National Steel Symphony Orchestra in Trinidad and Tobago (2017)

- **My Home, Passion for Pan** – a free to the public concert at NAPA to commemorate 20 years of composing music for the steelpan (2019)

- **Executive Producer** of a series of videos profiling the legacy of people in pan:
  - *My Home* – video produced with Etienne Charles (2019)
  - And Trinidad and Tobago/ USA steelband and big band musicians:
  - *A Better Tomorrow* – Kareem Brown series (6 episodes) (2021)
  - *Pan on the Move* (in tribute to Dr. Ray Holman) (2022)
  - *A Better Tomorrow* – Women in Pan series (10 episodes) (2023)
  - *Duvone Stewart – The Man Behind The Music* (2023)

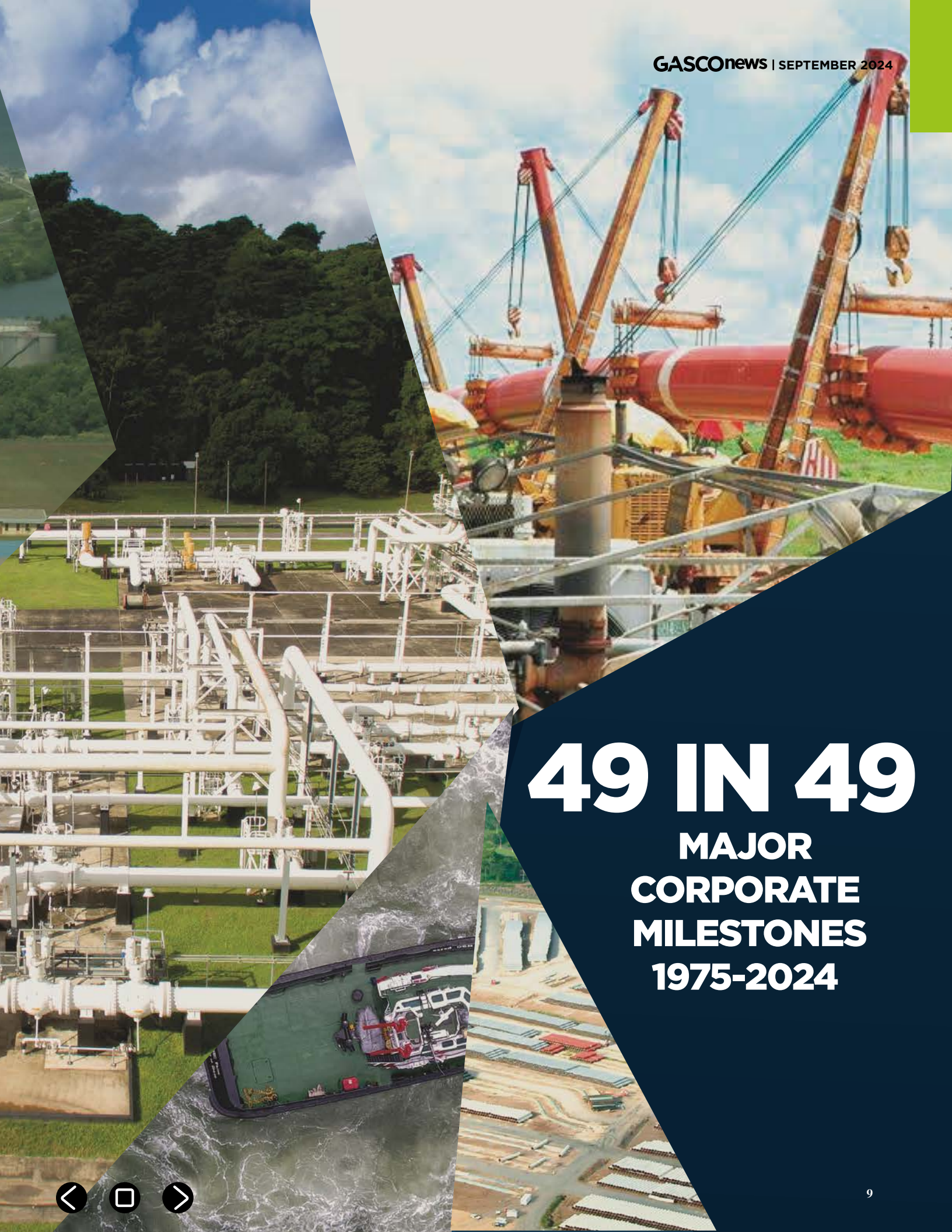
OTHER ACCOLADES

Mr. Loquan has received several notable accolades throughout his career, including:

- Silver Gilt Medal - First place in Faculty of Engineering, UWI - 1982
- Trinidad Organization of American States (OAS) Scholarship to pursue MBA in USA - 1990
- One of 50 Distinguished Alumni Awardees by The UWI, St. Augustine Campus - 2011
- Ministry of Foreign Affairs, Chile – Presentation to Mark Loquan in recognition of his contribution and support to the bilateral relationship between Trinidad and Tobago and Chile - 2022

Mark Loquan's contributions to energy and music have had enduring impact, and set both industries on a path for sustainable growth. We at NGC acknowledge with great pride and gratitude his vision, passion, guidance and service to country.

We wish him every success in his future endeavours.



49 IN 49

MAJOR CORPORATE MILESTONES 1975-2024

49 IN 49

MAJOR CORPORATE MILESTONES 1975-2024

Early pipelines
In 1977-78, a major 97 km/24-inch-diameter marine pipeline with a capacity of 400 million standard cubic feet per day (MMscf/d), was installed from Amoco's offshore Teak field to Point Galeota. Two landlines, one from Beachfield to Picton and a second from Picton to Phoenix Park were also installed.

Construction of 30-inch diameter marine pipeline
In 1982-83, a 30-inch-diameter marine pipeline with a capacity of 600 MMscf/d, was built from the Cassia offshore field to Phoenix Park, via Beachfield and Rio Claro. This system added 123 kilometres to the pipeline network and increased NGC's transmission capacity to 1,000 MMscf/d.

1975 *1977-1978* *1979* *1982-1983*

NGC

Birth of NGC
Government announced that The National Gas Company of Trinidad and Tobago Limited (NGC) - a wholly owned state company with an authorised share capital of TT$45 million - would be the sole seller of gas in Trinidad and Tobago. The company commenced operations on August 22nd, 1975.

Formation of National Energy
On September 7, 1979, National Energy Corporation of Trinidad and Tobago Limited (then NEC) was established to "guide the development and management of oil, gas and other mineral resources of Trinidad and Tobago and to assist the Government in the formulation of energy and industrial policy and strategy."

Initiation of Flare Gas Conservation Project
NGC was mandated to put in place the infrastructure to capture, compress and bring to shore the natural gas which was being wasted through flaring. Two compression platforms were commissioned by NGC in the Teak and Poui fields.

1989

Incorporation of PPGPL
In 1989, NGC received government's approval to build and operate a natural gas processing plant through a joint venture with ConocoPhillips and Pan West. NGC's initial shareholding was 49%. This was the genesis of Phoenix Park Gas Processors Limited (PPGPL); incorporated in May 1989 and made operational in June 1991.

1992

NGC/NEC merger
NGC was given an expanded mandate by the Government to be the 'prime mover in gas-based development' to facilitate and promote energy projects that would deepen and broaden gas utilisation. This new mandate required a strategic merger between NGC and NEC (now National Energy).

Major community relations programmes
NGC embarked on a programme under which the Company built or refurbished over 40 basketball courts and hosted a nationwide community basketball tournament. It also launched the Marine Environmental Awareness Programme (MEAP), offering training programmes in coastal villages.

1993

Introduction of commodity-linked pricing
Product-related or commodity-linked pricing was a gas sales contract innovation developed and approved in 1988, and first used in 1993. This mechanism is credited with facilitating the rapid expansion of downstream industry and is considered a critical component of the Trinidad Gas Model of Development.

1994

LABIDCO formed
In 1994, NGC, in a joint venture with Petrotrin (the site's former landowner), formed the La Brea Industrial Development Company Limited (LABIDCO), to build and manage an industrial site at La Brea. The site was chosen mainly for the natural deep-water harbour at the Port of Brighton.

49 IN 49

MAJOR CORPORATE MILESTONES 1975-2024

Expansion of network
In 1998, Amoco built two lines: a 40-inch-diameter offshore line from its Mahogany field to Beachfield and a 36-inch-diameter landline from Beachfield to Point Fortin. NGC purchased the right to transport gas through the offshore line and acquired ownership of the landline. In 1999, NGC built a 36-inch diameter landline from Beachfield to Point Lisas. NGC's personnel carried out the design and construction of the NGC line in-house, and were involved in the design and engineering of the Amoco lines.

100 LICs
In 2003, NGC reached the milestone of 100 customers in the Light Industrial/ Commercial/Transportation sector.

First billion-dollar profit
The NGC Group achieved a record after-tax profit of TT$1.2 billion in 2003, the first time the company crossed the one billion-dollar mark.

1995 | 1998-1999 | 1999 | 2003

Formation of ALNG
Atlantic LNG Company of Trinidad and Tobago (ALNG) was formed in July 1995 as an initiative of NGC and the Cabot Corporation.

NEC re-operationalised
In January 1999 NEC was re-operationalised as a separate subsidiary with responsibilities for providing and managing port and marine facilities at Port Point Lisas; the management of the La Brea Estate and adjoining port on behalf of LABIDCO; as well as the continued development of new industrial sites.

ALNG Train 1 completed - first LNG shipment
ALNG Train 1 was heralded as the first Greenfield LNG project to be developed in a small country in the Western Hemisphere in 25 years. In 1999, the country shipped its first LNG cargo.

Construction of the Beachfield Upstream Development (BUD) pipeline
The 36-inch-diameter BUD marine line was constructed in 2004. It served as the catalyst for NGC to deepen and expand its operations at Beachfield. The capacity of NGC's pipeline system increased from 1.4 Billion cubic feet (Bcf) to 2Bcf in anticipation of higher demands by new gas-based customers.

NEO and Tobago pipelines completed
In 2011, NGC completed a 36-inch-diameter North-Eastern Offshore Pipeline (NEO), which runs southwards from the Angostura field to connect to NGC's network in Guayaguayare, and a 12-inch-diameter Tobago line, which runs northwards, ending in Lowlands, Tobago.

2003 2004 2005 2011

Introduction of SCADA system
In 2003, NGC implemented a Supervisory Control and Data Acquisition (SCADA) system, a critical milestone in the use of technology within NGC. The SCADA system of instrumentation was installed throughout the pipeline network, allowing the network to be monitored remotely from NGC's control room. Prior to this, monitoring of the pipeline network was undertaken by employees out in the field, using communication devices to call in data.

Completion of the Cross-Island Pipeline
The Cross Island Pipeline (CIP) – a 77 km, 56-inch diameter onshore line – was built to transport gas to Atlantic LNG Train 4. Not only was this the largest single infrastructure project carried out by the company, but CIP was among the largest natural gas pipelines in the world.

Launch of reforestation programme
NGC's large-scale reforestation exercise, launched in 2005, aimed to replant an area of forest equivalent to that cleared for the development of the Cross-Island Pipeline, Beachfield Upstream Development and Union Industrial Estate. This project was aligned to the Company's policy of achieving 'no net loss' from business operations.

49 IN 49

MAJOR CORPORATE MILESTONES 1975-2024

First gas to Cove Eco-Industrial Business Park

Cove is the first natural gas-based industrial estate in Tobago. It includes a ground flare, the first of its kind in the country. First gas was received on the estate via the Tobago pipeline in 2012.

First direct LNG cargo marketing

On August 17, 2012, TTLNG - a subsidiary of NGC - loaded its first direct-sale cargo of LNG. It has since been marketing its cargoes directly to the global LNG market.

Port of Galeota

Phase 1 of the new Port of Galeota, built by National Energy on behalf of the government, was opened. The Port is intended to be a logistics hub for exploration and production companies on the south-east coast and operators in regional energy provinces.

2011 2012 2013 2014

First international TSA signed with Tanzania

In 2011, NGC and National Energy signed a Technical Services Agreement (TSA) with the Tanzania Petroleum Development Corporation for the provision of technical, legal and commercial advisory services. This was the first agreement executed to market Group services internationally and an important milestone in the Group's campaign to become a global energy player.

Incorporation of NGC CNG

NGC CNG Company Limited was incorporated to accelerate and expand the use of Compressed Natural Gas (CNG) as a major alternative transportation fuel in the country.

Network milestone

In 2013, NGC's network crossed the 1,000 km mark, including both land and marine pipelines.

PPGPL and TOTAL acquisitions

NGC increased its ownership of PPGPL to 90% in 2013, by acquiring ConocoPhillips' 39% stake. This was followed by NGC's purchase of the Exploration and Production (E&P) assets in the Angostura field of the France-based energy operator TOTAL Trinidad B.V., and Elf Exploration Trinidad B.V.'s 30% interest in Block 2 (c) and 8.5% in Block 3 (a) respectively.

2015

TTNGL IPO
The historic Initial Public Offering of shares in TTNGL - a subsidiary of NGC with shareholding interest in PPGPL - allowed citizens for the first time to invest directly and own stakes in the energy sector. The IPO was oversubscribed 1.77 times.

2017

TTNGL APO
Following the success of the IPO, an Additional Public Offering allowed further citizen investment in TTNGL. The public now holds 75% equity interest in the company.

2018

Carbon sequestration study
In July 2018, NGC commissioned The University of the West Indies to conduct a Carbon Sequestration Study to determine the carbon impact of NGC's reforestation exercise. The results showed that at the end of 2018, the total carbon sequestered by the reforestation initiative was valued at just over TT$1.5 million.

First Sustainability Report
In October 2018, NGC launched its first-ever Sustainability Report, to give an account of the economic, social and environmental impacts of its business. This publication signalled a shift in organisational focus toward greater sustainability in operations and commercial activities.

Completion of Liquid Fuels Pipeline Project and Phoenix Park Valve Station upgrade
The Liquid Fuels Pipeline Project (LFPP) achieved 100% mechanical completion, while the Phoenix Park Valve Station (PPVS) received permission to flow hydrocarbons through the facility in 2018.

2015-2019

Extension of internationalisation efforts
Between 2015 and 2019, the NGC Group signed partnership agreements with entities in Venezuela, Grenada, Jamaica, Ghana, Mozambique and China, while advancing discussions on opportunities in Guyana, Chile, the USA and Tanzania.

49 IN 49

MAJOR CORPORATE MILESTONES 1975-2024

PPGPL expansion
NGC Group member PPGPL began its international expansion with the acquisition of NGL marketing assets in Houston, Texas. Over the next two years, the company would acquire two additional assets in Hull, Texas and Rush City, Minnesota.

Implementation of hybrid work model
In response to the global COVID-19 pandemic, NGC joined other companies in implementing a work-from-home arrangement for non-essential workers. The company has maintained a hybrid work environment to date, with employees still having the flexibility to work remotely.

CariGreen

Green education products
NGC created and launched a series of products aimed at raising awareness around the energy transition and sustainability. These included the NGC Energy SmarTT app; the CariGreen research website; the Climate Adaptation and Resilience Portal (CARP) and the first ever Green Energy Map of Trinidad and Tobago.

2019 — 2020 — 2021-2024

National Energy (Guyana) Inc.

First international office for NGC Group
National Energy (Guyana) Incorporated was established to pursue business opportunities on the ground in Guyana.

Risk-Based Process Safety monograph
Recognising the need for new process safety measures during the pandemic, NGC proposed partnering with the Centre for Chemical Process Safety (CCPS) to produce response guidelines and insights to help companies across the world manage new risks. With NGC's support, a monograph entitled '*Risk-Based Process Safety During Disruptive Times*' was produced for use by industry professionals worldwide.

Commencement of Ghana design-build project
NGC commenced work on a contract to design, procure, construct, install and commission a pressure regulator skid package for the Takoradi Distribution Station in Ghana. This was the first time that NGC executed a project of this type outside of Trinidad and Tobago – an achievement made doubly noteworthy by forced constraints during the pandemic.

Launch of I2A programme
NGC created a programme called Inspire-2-Achieve (I2A) to help prepare young people in its fenceline communities to meet present and future challenges sustainably. I2A is designed to increase interest in Science, Technology, Research, Engineering, Arts and Mathematics (STREAM), entrepreneurship and environmental preservation as career options.

Beyond 315 programme
On International Day of Forests 2023, NGC officially commemorated the end of its 18-year Reforestation Programme. NGC has now extended the project into a broader programme called "Beyond 315", which seeks to support and promote agroforestry and ecotourism, inter alia.

Atlantic restructured
After almost five years of work to finalise the restructuring of Atlantic LNG, an agreement for a new unitised commercial structure was successfully executed in 2023. The landmark commercial arrangement for the facility effectively boosted the country's stake in the LNG business, as NGC now has an increased equity share in the company.

2022

OGMP gold standard
In 2021, NGC made a voluntary commitment to report on its campaign to reduce methane emissions from its operations, after joining the global Oil and Gas Methane Partnership 2.0 (OGMP 2.0). The company's first report, submitted in 2022, earned NGC the Gold Standard status of reporting under the OGMP 2.0 framework.

Resumption of onshore gas production
Onshore gas production in Trinidad resumed in 2022 after two decades, following the startup of the Coho facility in the Ortoire block. In 2023, first gas was delivered from another field in the Ortoire block via the Cascadura natural gas and liquids facility. NGC was responsible for construction of associated infrastructure that facilitated the tie-in of these facilities to the domestic network.

2023

Formation of NGC Green
The operations of NGC CNG were expanded, and a deliberate and strategic decision was made to rename the company as NGC Green Company Limited. NGC Green - a subsidiary of NGC – was given a mandate to expand and accelerate the Group's pursuit of local, regional and international opportunities around clean and renewable energy; energy efficiency; sustainable transportation; alternative fuels; and research and development.

Construction of solar park project
Construction began on Trinidad and Tobago's first utility-scale solar project, being built across two sites – Brechin Castle and Orange Grove. The project is expected to produce approximately 300,000MWh of green electricity per year. The NGC Group has a 30% equity investment interest.

49 IN 49

MAJOR CORPORATE MILESTONES 1975-2024

First public CNG station in Tobago
NGC Green launched a new CNG station at the Cove Industrial Estate. The station represented the first public supply point on the island, and the 13th public station overall for Trinidad and Tobago.

2024

2023-2024

Cross-border gas deals advanced
A significant step was made towards securing access to gas from Venezuela with the issuance of the Dragon Field Exploration and Production Licence to NGC and Shell in December 2023, for the export of 100% of the natural gas from the Dragon Field to Trinidad and Tobago. In July 2024, another licence was signed for joint development of the Cocuina Field, and progress was also made to monetise the Manatee reservoir.

STRENGTHENING THE GAS VALUE CHAIN

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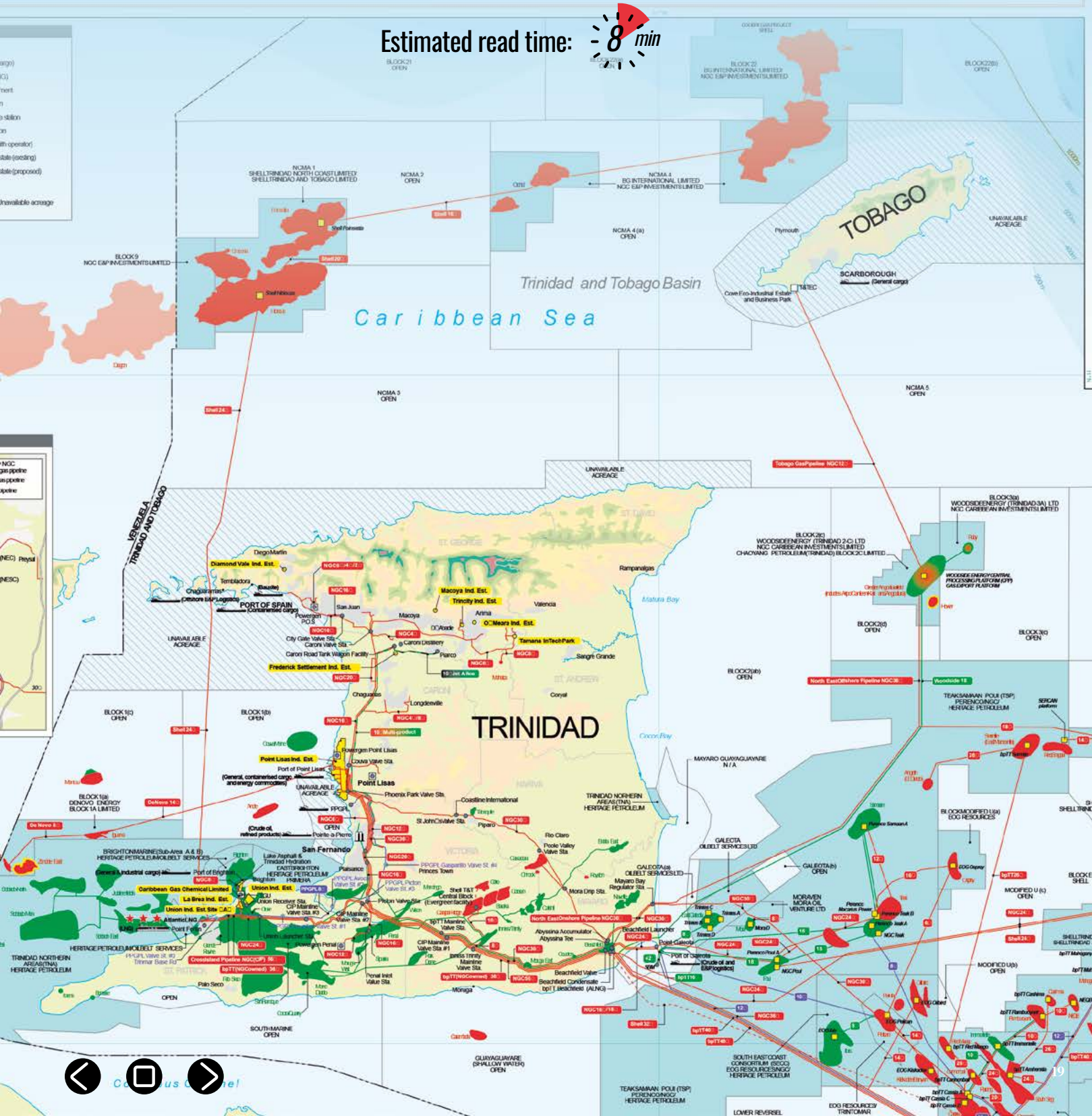


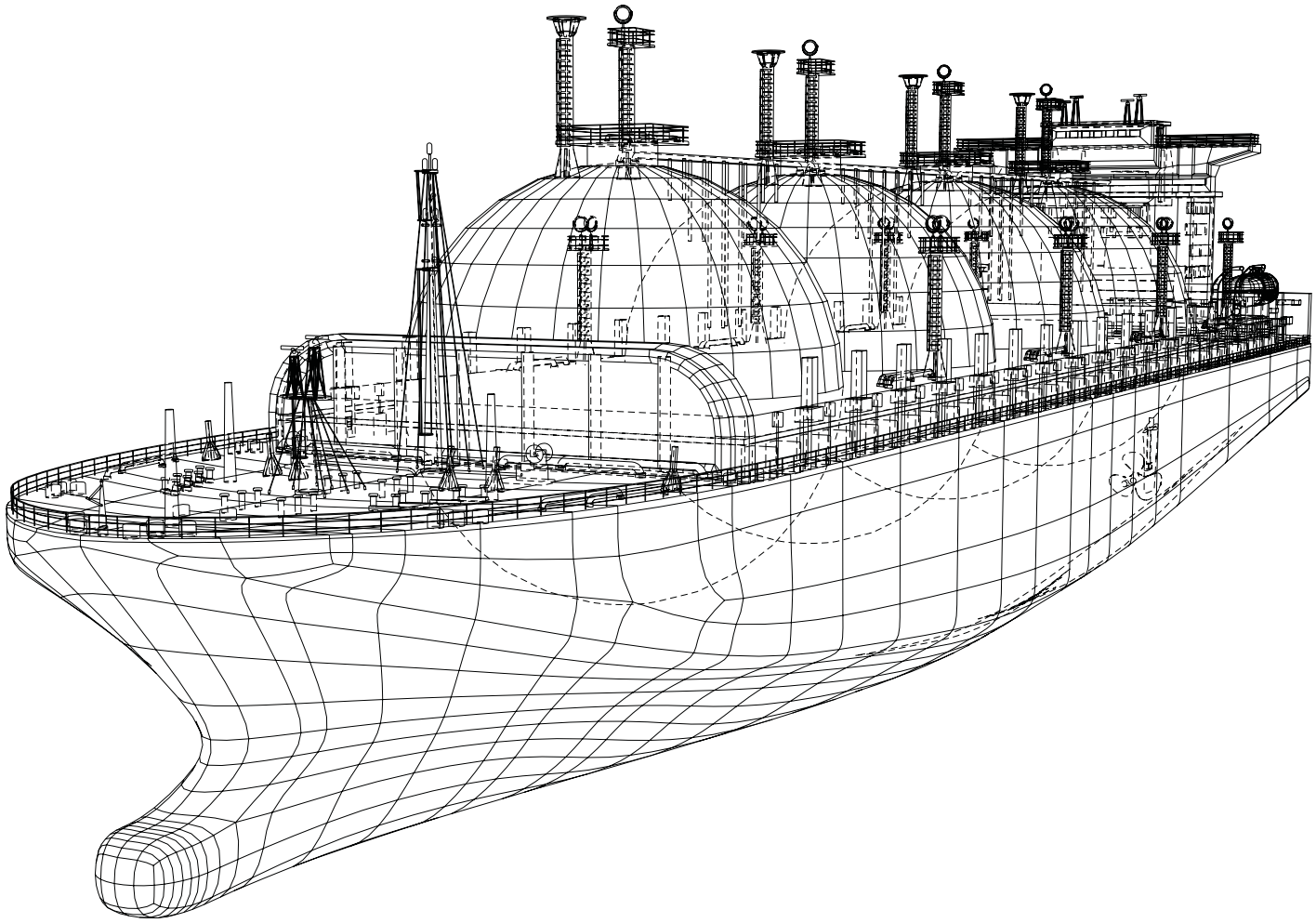
ON THE GREEN AGENDA

KEY TAKEAWAYS

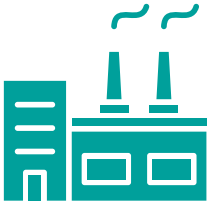
NGC has been strengthening the gas value chain to ensure its sustainability across the long term.

The company has been focusing on securing supply, expanding and upgrading its network and developing the downstream sector.

NGC has been in the business of natural gas purchase, aggregation, sale and distribution for almost 50 years. Despite diversification of its portfolio over the years, its core gas-based activities have remained the beating heart of its operations. In fact, the company has reinforced its focus on this axis of the business, deepening its participation in gas markets and strengthening the gas value chain to ensure its sustainability across the long term.



WHY FOCUS ON NATURAL GAS?



Trinidad and Tobago's industrial hubs and power generation sector are powered by natural gas. A strong gas value chain is therefore critical to the sustainability of both, and to the national economy, which is heavily dependent on revenues from LNG and energy commodities.

In light of market and geopolitical factors, the demand for gas over the medium term is projected to remain strong. This means that gas will continue to be a robust revenue source for producing countries such as Trinidad and Tobago.

Natural gas can support climate action. Even as the world transitions towards low-carbon energy, harnessing natural gas - the cleanest burning fossil fuel - is considered a low-hanging opportunity to reduce carbon output in the interim.

There is a healthy market supply of LNG both within and outside the Americas. Strong supply and a short supply chain increase the availability of this energy source, and therefore strengthen energy security in consuming countries.

For several reasons – including fiscal disincentives to the use of carbon-heavy fuels - LNG can be a cheaper option than imported oil in the long term to satisfy regional energy demand. Cheaper energy can liberate capital for development projects and reduce the cost of living for citizens.

HOW IS NGC STRENGTHENING THE GAS VALUE CHAIN?

1. SECURING SUPPLY

Cross-border gas

Trinidad and Tobago's gas basins are maturing. To supplement domestic reserves and ensure supply stability over the medium to long term, NGC has been working alongside the MEEI and other stakeholders to explore opportunities for importing gas from across the border. Neighbouring Venezuela has vast offshore reserves of gas, with some fields straddling its maritime border with Trinidad. Through significant diplomatic effort and technical negotiations, important progress has been made in recent years towards the integration of supply from some of these reserves into the local market.

L to R – Verlier Quan Vie, Vice President Commercial, NGC; Mark Loquan, President, NGC; Dr. Joseph Ishmael Khan, Chairman, NGC; The Hon. Stuart Young, Min. of Energy and Energy Industries; Eugene Okpere, outgoing Senior Vice President and Country Chair, Shell Trinidad and Tobago; Adam Lowmass, incoming Senior Vice President and Country Chair, Shell Trinidad and Tobago; Stephane Picarle, General Manager, Commercial, Shell Trinidad and Tobago

- **Dragon** – The Dragon field lies in Venezuelan waters about 25 miles north of its Paria peninsula. It is estimated to contain 3.2-4.2 trillion cubic feet (Tcf) of natural gas. The development of the Dragon Field is a complex, cross-border exploration and production arrangement, involving close collaboration between the governments of Trinidad and Tobago and Venezuela, along with NGC and international energy partner Shell.

  After several years, this collaboration culminated in the issuance of the Dragon Field Exploration and Production Licence to NGC and Shell in December 2023, for the export of 100% of the natural gas from the Dragon Field to Trinidad and Tobago. This development represented a key milestone in the project, which is tentatively projected to deliver first gas by 2027.

- **Manatee** – The Loran-Manatee gas field is a large reservoir straddling the maritime boundary between Venezuela and Trinidad. In 2019, the governments of both countries executed an agreement to allow each to independently develop its share of the hydrocarbons located in the cross-border field.

ON THE GREEN AGENDA

Shell and NGC have since been working towards monetisation of the Manatee field's natural gas reserves – Shell as the operator responsible for development and production, and NGC as the entity that will facilitate receipt and processing of the gas at its Beachfield facility. The Manatee reserve is estimated to hold around 2.7 Tcf of gas, and production from the field is slated to commence in 2027.

- **Cocuina** – The cross-border Cocuina-Manakin gas field is located offshore Venezuela in Plataforma Deltana Block 4. In July 2024, the MEEI announced the signing of the Cocuina Field Exploration and Production Licence, which will enable joint development of this field. NGC Exploration and Production Limited (NGC E&P) – a wholly owned subsidiary of NGC – and bp Exploration (Caribbean) Limited (bpECL) have been named as co-licensees. The field could potentially produce approximately 400 million cubic feet of gas per day.

Molecular optimisation

In the context of Trinidad and Tobago's maturing gas reserves, every molecule of gas saved or added contributes to supply stability. A major part of NGC's work programme has therefore been centred on molecular optimisation.

- **No gas left behind** – For several years, NGC has been lobbying for the monetisation of small and marginal fields. In 2018, using seismic and other relevant data from the Ministry of Energy and Energy Industries (MEEI), NGC undertook an internal feasibility study of specific small and marginal fields. Based on the findings of this study, NGC submitted recommendations to the MEEI around how the government can get the right operators into these fields. Since then, NGC has continued to work with industry stakeholders to help bring such fields into production. The Zandolie field, brought online in 2022 by DeNovo Energy Limited, is one example of a marginal field that has been contributing to domestic volumes.

- **Making power more efficient** – In Trinidad and Tobago, electricity remains a subsidised public utility, and there are notable inefficiencies in how power is produced and consumed in the country. NGC has been working closely with the state utility company and independent power producers to address some of the inefficiencies which are contributing to wasted molecules and value leakage. Since consumers share some of the responsibility, the company's efforts include a broad-based public education campaign around energy efficiency. NGC Group subsidiary National Energy is also spearheading a Super ESCO (Energy Service Company) project to improve efficiency at the industrial level.

Upstream investments

Intent on diversifying its business portfolio, NGC has been seeking opportunities to expand its presence and participation in upstream exploration and production. Most recently, in 2023, NGC E&P Investments Limited—a wholly owned subsidiary of NGC—completed the acquisition of Heritage Petroleum Company Limited's (Heritage's) participating interest in the Offshore Blocks NCMA 4 (20%), Block 22 (10%) and Block 9 (100%), located in Trinidad's North Coast Marine Area (NCMA). It also acquired Heritage's 19.5% shareholding in Point Fortin LNG Exports Limited (PFLE). Gas from these blocks is sold to NGC for the domestic market and to PFLE for the LNG export market.

This collective acquisition will enable NGC to collaborate more closely with its joint venture partners along the natural gas value chain and will position the company for strategic growth from any future upstream development in the vicinity of these blocks.

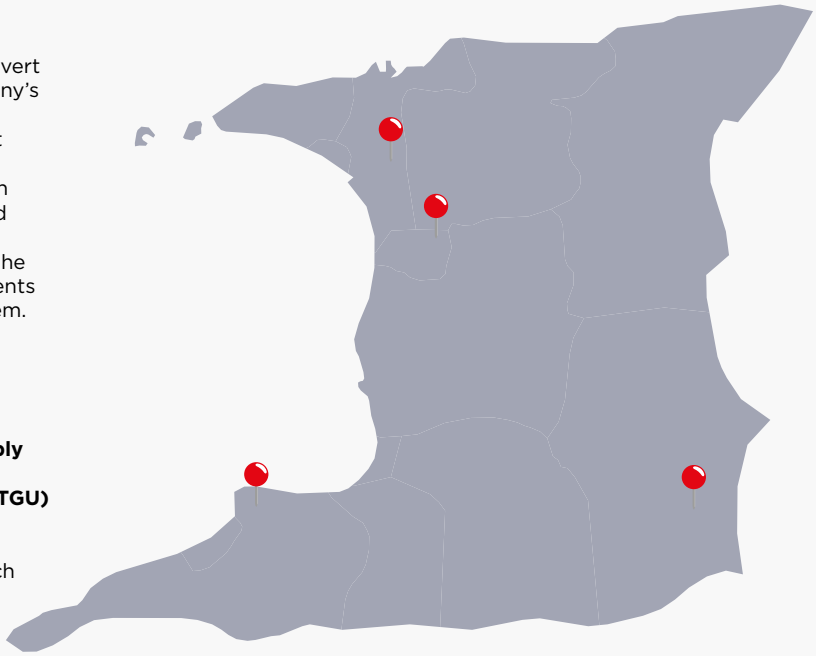
2. EXPANDING AND UPGRADING THE NETWORK

NGC's transportation and distribution pipeline network is the backbone of its gas merchandising business. Maintenance and expansion of this network are critical to ensuring the company can fulfil its role in the midstream of the gas value chain. In the past two years, the company has completed several infrastructure upgrade and expansion projects to connect new customers, improve service to existing ones and tie new gas fields into the system.

These include:

16-inch Low-Pressure Switch Over (LPSO)
This project aimed to divert segments of the company's existing 16-inch low-pressure pipeline at four locations between Barataria and Wrightson Road, Port of Spain, and upgrade customers previously serviced by the diverted pipeline segments to a high-pressure system.

The Alternate Gas Supply (TAGS) to the Trinidad Generation Unlimited (TGU) power plant
NGC undertook construction of a 20-inch pipeline and metering station to provide an emergency gas supply to TGU in La Brea. This new infrastructure allows NGC operational flexibility to maintain safe and reliable supply of natural gas to TGU's power plant, which provides more than 50% of Trinidad and Tobago's electricity needs.



Charlieville Diversion
NGC replaced a portion of the existing 16-inch Charlieville pipeline with a 24-inch pipeline, increasing safety and reliability along the network.

George Aboud and Sons Limited (GASL) pipeline
NGC commissioned a new 4-inch natural gas pipeline to GASL, further expanding its supply network and customer base.

Coho and Cascadura tie-in infrastructure
NGC completed construction of pipelines and associated facilities to tie the Coho and Cascadura fields into NGC's existing transmission network. This enabled production from onshore gas fields for the first time in 20 years.

3. DOWNSTREAM DEVELOPMENT

Contract negotiations

A healthy downstream sector is just as critical to the strength of the value chain. NGC has been methodically negotiating contracts with its customers, to support continued operations at the many petrochemical, manufacturing and commercial facilities supplied by its network. In 2023 alone, six contracts were renewed to cover several ammonia, methanol and urea plants on the Point Lisas Industrial Estate.

LNG

As part of its effort to internationalise its brand and operations, NGC has been looking to expand its participation in the LNG market.

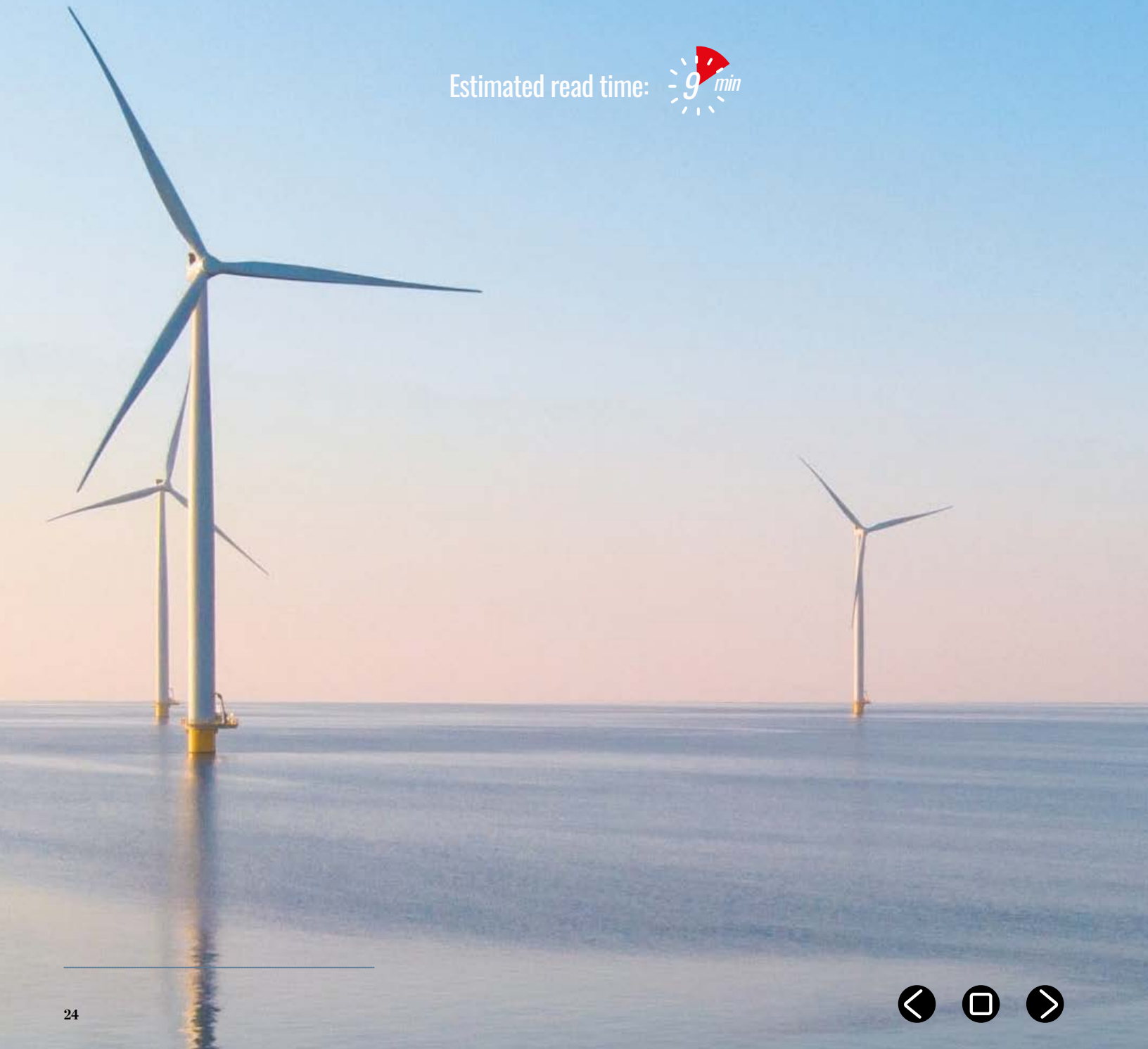
- **Atlantic** - 2023 marked the culmination of almost five years of work to finalise the restructuring of Atlantic LNG. In December, the MEEI announced that an agreement for a new unitised commercial structure for Atlantic was successfully executed. The landmark commercial arrangement for the facility has effectively boosted the country's stake in the LNG business, as NGC now has an increased equity share in the company. This higher participating interest better positions NGC to grow as an international player in the LNG space, and leverage strong LNG demand to generate greater value for Trinidad and Tobago.
- **Small-scale LNG** - NGC has been exploring the feasibility of micro and small-scale LNG projects in the Caribbean for some years, because the company believes there are real and valuable opportunities in that space. Through different partnerships and agreements, the company is working assiduously to bring such projects to fruition, and potentially expand the use of LNG across the Caribbean.

FOR THE FUTURE

Natural gas is projected to remain an important fuel in the energy transition, with new opportunities for established gas players such as NGC. By strengthening the domestic gas value chain to ensure its long-term sustainability, NGC is securing a place not just for itself, but for Trinidad and Tobago, in that future.

THE POTENTIAL FOR WIND ENERGY IN TRINIDAD AND TOBAGO

Estimated read time: 9 min



ON THE GREEN AGENDA

KEY TAKEAWAYS

There are various driving factors towards integration of wind energy technologies into Trinidad and Tobago's energy mix.

These factors include a high resource potential; a strong demand for green hydrogen; supporting industrial infrastructure; and a skilled energy workforce.

Some challenges will need to be overcome before wind can be harnessed, including legislative roadblocks and capital considerations.

As a signatory to the 2015 Paris Agreement, Trinidad and Tobago has made a commitment towards the world's efforts to limit global warming to 1.5°C or less compared to pre-industrial levels. To this end, the country aims to achieve a reduction in overall emissions from the power generation, transportation and industrial sectors, of 15% by 2030 compared to the 2013 base year. Achieving this target will require the incorporation of renewable energy sources into the country's energy mix. Effectively, Trinidad and Tobago's energy transition must be accelerated.

NGC is playing a critical role in advancing the energy transition through investments, strategic partnerships and collaboration for national policy, strategy and project development. The company is supporting Trinidad and Tobago's intended nationally determined contribution (iNDC) of 15% greenhouse (GHG) emissions reduction through its initiatives and investments. These include:

- Equity investment of 30% in Brechin Castle Solar Project;
- Formation of NGC Green to provide greater focus on the advancement of energy efficiency, renewable energy and alternative energy projects in Trinidad and Tobago, the Caribbean and internationally;
- Signing of a Letter of Intent with NewGen Energy Limited to accelerate a hydrogen start-up company in Trinidad and Tobago;
- Participation on the Cabinet-appointed Carbon Capture and Carbon Dioxide Enhanced Oil Recovery Steering Committee;
- Participation on the National Council for Sustainable Development.

WIND ENERGY: A CATALYST FOR GREEN HYDROGEN

In 2022, NGC subsidiary, National Energy, co-authored *The Roadmap for a Green Hydrogen Economy in Trinidad and Tobago*, which was sponsored by the Inter-American Development Bank (IADB). The document outlines a pathway towards this country's entry into the green hydrogen business, in which hydrogen will be generated via electrolysis from renewable sources.

At the Caribbean Sustainable Energy Conference in 2023, the Minister of Energy and Energy Industries announced that his Ministry will be collaborating with National Energy to embark on a pilot project to produce green hydrogen in Trinidad and Tobago.

THE ROADMAP MAKES A STRONG CASE FOR THE DEVELOPMENT OF A GREEN HYDROGEN INDUSTRY, AS THIS POTENT ENERGY CARRIER IS PREDICTED TO SUPPLY **12% OF THE WORLD'S ENERGY DEMAND BY 2050.**[1]

For decades, Trinidad and Tobago has been positioned as a leading exporter of methanol and ammonia, of which hydrogen is a major component. The roadmap provides preliminary evidence that the country is well placed to leverage its energy-based expertise, infrastructure, and trade relationships to capitalise on the emerging opportunities in green hydrogen for the production and export of green methanol and green ammonia. Wind energy – specifically offshore wind energy - is identified as the renewable energy source with the highest potential to produce the required energy to power the electrolysis of water molecules for production of green hydrogen.

THE DOCUMENT ESTIMATES THAT UP TO 57GW OF OFFSHORE WIND COULD BE EXPLOITED ACROSS FIXED AND FLOATING TECHNOLOGIES, EQUATING TO 25GW IN AVERAGE ENERGY OUTPUT.[2]

[1]https://www.irena.org/Energy-Transition/Technology/Hydrogen
[2]https://publications.iadb.org/en/roadmap-green-hydrogen-economy-trinidad-and-tobago

ON THE GREEN AGENDA

WHY WIND ENERGY?

In May 2023, the Ministry of Planning and Development hosted a workshop to present the *Strategy for Wind Power Generation in Trinidad and Tobago*. The strategy was derived from a study undertaken from September 2022 to April 2023 by a consortium led by an international firm Stantec that specialises in sustainable engineering, architecture and environmental consulting.

The document outlines steps that should be taken for successful development of a wind energy industry in Trinidad and Tobago by 2035. In agreement with the roadmap for hydrogen, the wind energy strategy indicates that there is exploitable wind energy potential in excess of 25GW both onshore and offshore. Furthermore, the report puts forward a target of 2GW of installed wind energy capacity by 2035.

There are various driving factors towards adoption of wind energy technologies as an addition to the country's energy mix, including:

Trinidad and Tobago's natural gas-based petrochemicals industries that require hydrogen feedstock. Green hydrogen can be a viable solution for sustaining and growing these industries and can position the country as a central player in the green hydrogen space.

The addition of wind energy would allow natural gas used for power generation to be redirected towards higher value petrochemicals production.

There is the potential for over 2.5GW of onshore wind energy and over 30GW of offshore wind energy. Offshore wind also reduces the issue of land usage associated with other forms of renewable energy, such as solar energy.

Trinidad and Tobago possesses facilities including industrial ports, and equipment such as heavy-lift cranes that can support the wind energy industry during the construction and operations phases.

There are established trade relationships with multinational methanol and ammonia firms which are poised to propel the new industry.

Trinidad and Tobago possess a skilled workforce in the energy sector that can transition into the wind energy industry with retraining and reskilling.

Creation of a new industry would create new job opportunities in productive industry.

IT'S NOT ALL SMOOTH SAILING WITH WIND

The strategy indicates that while the potential for wind energy in Trinidad and Tobago is high, there are potential roadblocks that could hinder its successful implementation. While the Global Wind Atlas - a free, web-based application developed to help policymakers, planners, and investors identify high-wind areas for wind power generation[3] – indicates strong potential for adoption of wind power in Trinidad and Tobago, a Wind Resource Assessment Programme (WRAP) is required to evaluate the wind potential and chart a specific course for achieving targets. The WRAP process includes measurement and assessment of wind potential at prospective sites using meteorological masts and other data collection equipment such as LiDAR sensors, along with relevant software, depending on the characteristics of the selected location. Factors including wind speed and direction; temperature; relative humidity; atmospheric pressure; and air density would be assessed in the WRAP study.

Another factor to be considered in deciding whether to invest in wind energy assets is the Levelised Cost of Electricity (LCOE), which is defined as "the average total cost of building and operating the asset per unit of total electricity generated over an assumed lifetime." Alternatively, the levelised cost of energy can be thought of as "the average minimum price at which the electricity generated by the asset is required to be sold in order to offset the total costs of production over its lifetime."[4]

The Stantec report presents the following estimated LCOEs:

- **50MW onshore project – 45-85 US$/MWh**
- **200MW offshore project – 120 – 175 US$/MWh**

[3]https://globalwindatlas.info/en/about/introduction
[4]https://corporatefinanceinstitute.com/resources/valuation/levelized-cost-of-energy-lcoe/

Port of Galeota

Based on these figures, the report recommends that onshore wind measurements be started at Orange Field on the west coast and Galeota on the south-east coast of Trinidad. Commencement of offshore measurements is recommended at Galeota in Trinidad and at Crown Point on the south-east coast of Tobago.

Both the roadmap for hydrogen as well as the strategy for wind energy refer to the need for a suitable policy, legal and regulatory framework to support the implementation of renewable energy. Trinidad and Tobago has clearly signalled its stance as supporting decarbonisation through its iNDCs, the National Climate Change Policy, the National Environmental Policy and the Government's Vision 2030. However, renewable energy is yet to be incorporated into the laws that govern power generation in Trinidad and Tobago. The strategy highlights four critical Acts that would require amendment to include provisions for the adoption of renewable energy into the nation's energy mix:

- **Trinidad and Tobago Electricity Commission (T&TEC) Act (Amended 2009)**
- **Regulated Industries Commission (RIC) Act (Amended 2001)**
- **Environmental Management Authority (EMA) Act, 2000**
- **Town & Country Planning Act (Amended 1990)**

The legislation requires amendments to facilitate process harmonisation across governmental agencies and creation of an enabling environment for new industries that increases the ease of doing business. The lack of legislation to manage local content and local participation is also cited as a potential challenge in the strategy. Such a policy would address the need for capacity building to empower local communities, businesses and individuals to participate in the new industry's value chain. This would in turn, contribute to management of socio-economic and reputational risks.

Wind energy projects are capital intensive with multiple factors to be considered in the financial decision-making process. The strategy for wind energy estimates an investment of US$7-8 Bn would be required to construct a 2GW wind capacity plant in 2035.

ON THE GREEN AGENDA

The document identifies several areas of risk that would concern investors in making a decision, including:

- **POLICY RISK – related to the presence or absence of enabling legislation, regulations and project permitting processes**
- **PROJECT IMPLEMENTATION RISK – related to the availability of relevant skills, equipment and infrastructure**
- **COUNTERPARTY RISK – related to the ability of the electricity off-taker to meet contractual obligations**
- **CURRENCY RISK – related to the country's economic strength and commensurate level of currency volatility**
- **BUSINESS RISK – related to the level of confidence in the development of the industry**

IMPLEMENTING A WIND ENERGY STRATEGY

The wind energy strategy outlines an aggressive programme towards implementation of the country's first utility-scale wind energy facility by 2035 involving actions from key stakeholders as shown at right.

Following the establishment of a clear vision for wind energy integration, the strategy recommends the formation of a steering committee to provide guidance and resources and ensure alignment of stakeholders. This process has commenced and NGC has been invited to participate on the Inter-Ministerial and Agency Steering Committee for the deployment of utility-scale wind energy, as announced by the Minister of Energy and Energy Industries in June 2024.

Government
Set vision and goals, amend and create laws, and demonstrate commitment

Steering Committee on Wind Energy
Develop policies, procedures and legislation, and track progress

Technocrats and State Entities
Implement laws and procedures and manage the auction process

Wind Energy Developers
Develop projects, manage risks and ensure economic viability

Additionally, NGC subsidiary - National Energy – in collaboration with the Ministry of Energy and Energy Industries, has embarked on a pilot project for the production of green hydrogen in Trinidad and Tobago.

NGC is pleased to support the nation's journey towards wind energy generation, which will build on its history of low carbon natural gas-based development. ■

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HOW CAN INDUSTRIES BE MORE ENERGY EFFICIENT?

Estimated read time: 6 min

ON THE GREEN AGENDA

KEY TAKEAWAYS

Enhancing energy efficiency across industries is a strategic imperative for economic resilience, environmental sustainability, and improved competitiveness.

Strategies to achieve industrial EE include process changes, equipment upgrades and more mindful behaviours.

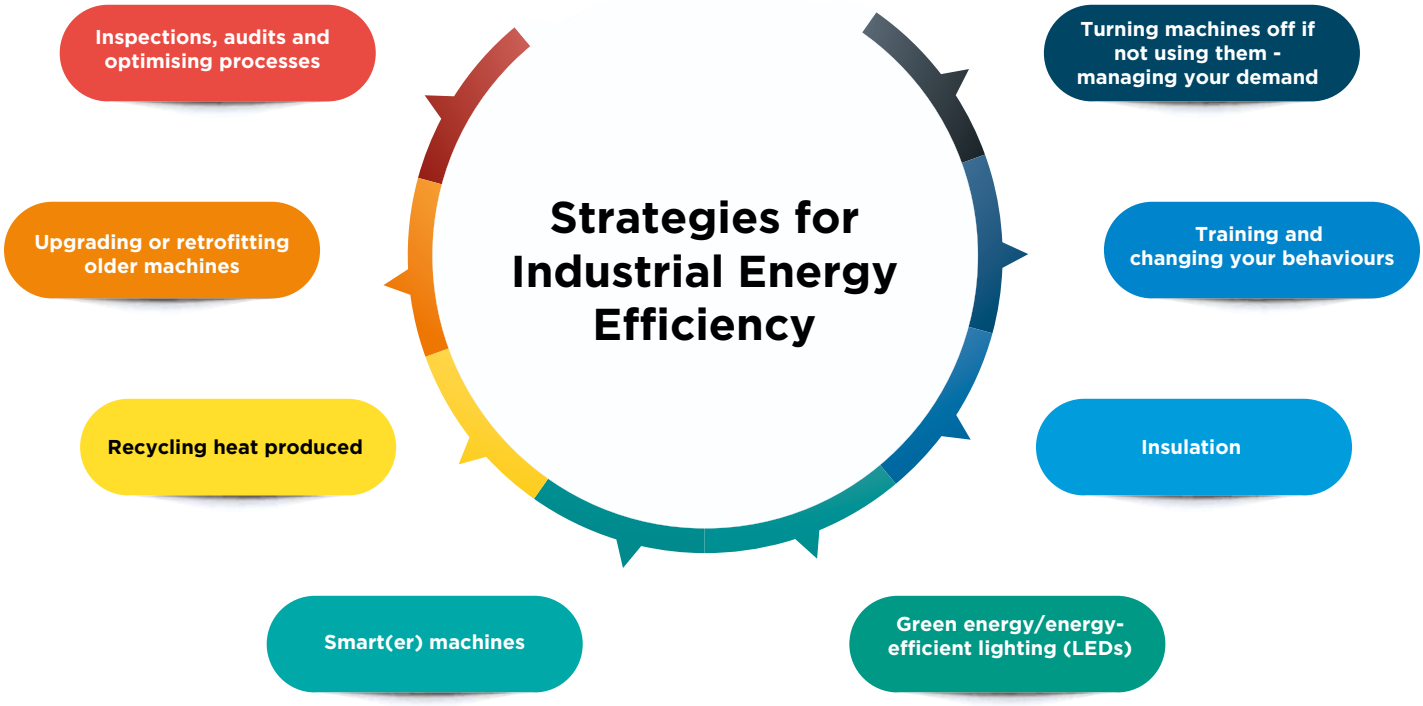
Energy efficiency is the use of less energy to accomplish the same task or the use of the same amount of energy to achieve a higher level of energy output. Energy efficiency can also mean a reduction in or elimination of wasted energy, leading some to call energy efficiency the "first fuel".[1] As such, optimised energy use through increased efficiency is always desired. In fact, increased energy efficiency is one of the methods that companies use in achieving optimal energy use.

Energy intensity can be considered a measure of the energy inefficiency of an economy and it differs from country to country, and between regions. While the United States and the EU reduced their energy intensity by 2% and 1.8% each year over the last 15 years, Latin America achieved an average annual reduction of only 0.5%.[2]

[1]International Energy Agency "Capturing the Multiple Benefits of Energy Efficiency" (2014) Accessed at https://www.iea.org/reports/capturing-the-multiple-benefits-of-energy-efficiency

[2]Claudia Vasquez, Jevgenijs Steinbuks, and Roberto Estevez. "From potential to action: energy efficiency in Latin America" (2023) https://blogs.worldbank.org/en/energy/potential-action-energy-efficiency-latin-america

FIGURE 1: STRATEGIES FOR INDUSTRIAL ENERGY EFFICIENCY



Even with these reductions, countries (and industries in these countries) should welcome any improvements that can be made in energy efficiency. Enhancing energy efficiency across industries is a strategic imperative for economic resilience, environmental sustainability, and improved competitiveness. Figure 1 summarises the main strategies for increasing energy efficiency.

1. The first strategy is Inspections, Audits and Process Optimisation.

The energy audit process - whether a walk-through audit[3] or comprehensive audit[4] - identifies areas where energy is being wasted and suggests specific areas for improvement, and establishes a baseline for tracking the progress of efficiency improvements. Based on the audit, process optimising recommendations can be implemented, where most businesses may significantly reduce overall energy costs, while reducing greenhouse gas emissions. In Trinidad and Tobago, National Energy's Super ESCO[5] programme, – an energy efficiency initiative in its pilot stage – allows National Energy to conduct energy audits for companies and share possible resultant savings with these companies. To date, several initial assessments with manufacturing companies have been completed.

2. Upgrading and/ or retrofitting older machines are also popular methods of increasing industrial energy efficiency.

This works by replacing the most energy-intensive components of your operations with more energy-efficient versions. The type of machinery that can be replaced includes pumps, compressed air systems, boilers, motors, Heating, Ventilation and Air Conditioning (HVAC) systems, and process equipment. Using the latest technology, newer machinery can be designed to do the same work more efficiently.

3. Recycling heat generated, also known as Waste Heat Recovery, maximises the use of energy produced, and thus inherently increases efficiency. Many processes create heat as a byproduct which can be wasted at times by expelling it to the environment – an excellent example is single cycle electricity generation. For processes generating significant waste heat, heat exchangers or other systems can be used to capture this heat and repurpose it for other process needs, or other beneficial uses, such as heating water or even in generating additional electricity without using additional fuel, as in combined cycle electricity generation.

[3]Walk-through Audits are audit assessment that involves a visual inspection and walk-through of the building or industrial plant and a review of existing energy bills to find and extract energy-saving opportunities. Walk-through audits can also be used as a jumping-off point for further plant analysis.
[4]Comprehensive audits involve detailed measurements and data collection to reach their conclusions about energy efficiency interventions. These detailed audits, which may also involve specialised equipment temporarily installed to gain better data, provides a more complete assessment of the installation's energy performance, leading to more granular recommendations around energy efficiency.
[5]Energy services company.

ON THE GREEN AGENDA

4. Real-time monitoring, via the use of modern technology, makes operationalising energy efficiency much easier. Smart manufacturing and data analysis via real-time energy dashboards and advanced analytics can give greater and more granular insights into energy use. Smart(er) sensors and controls can also automatically adjust process equipment, lighting or HVAC to save power or optimise use of energy. This enables proactive adjustments to processes to minimise wasted materials or energy and can even provide data for the data-driven decision-making that facilitates further optimisation.

5. Greening industrial operations by integrating renewables – wind, solar or other – can reduce industry reliance on fossil fuels, with the additional benefit of helping the environment. In some cases, facilities can be run using 100% renewable energy, with one example being the Zandolie gas platform, a single well platform off Trinidad's west coast that is 100% powered by wind and solar energy.

6. Generally, proper insulation in buildings keeps the heat in (or out, depending on intended purpose), so that less energy is needed to keep temperatures at desired levels. For industry, newer and more effective insulation, high-efficiency windows and doors (designed to minimise heat transfer) and cool roofs to reflect sunlight and emit any absorbed heat (to minimise cooling loads for industry air conditioning) can be used to minimise both energy requirements and its associated costs.

7. Embedding a green mindset among industrial workers is one of the most important ways to make industry more efficient and it can be done by the following:
   a. educating employees on best practices in energy efficiency
   b. encouraging employees to identify and report inefficiencies
   c. rewarding energy-saving initiatives suggested and implemented by employees
   d. cultivating an energy conservation and saving mindset.

   Changes in behaviour throughout an organisation will lead to significant gains in energy efficiency.

8. Finally, programme machines to turn off or shift to a sleep state, if not in use. Reduce consumption by minimising lighting and air conditioning energy use by use of timers, motion detection or other such energy saving measures. For industries in areas that employ peak pricing regimes for electricity, optimise production so that there are reductions in energy use during peak hours. Where possible, energy-intensive operations should be shifted to off-peak periods.

FIGURE 2: CHALLENGES TO ENERGY EFFICIENCY IN TRINIDAD AND TOBAGO

How can industries be more energy efficient | CONTINUED

Achieving greater energy efficiency is not without its challenges in Trinidad and Tobago.

a) Our biggest challenge by far is the low cost of electricity. The low cost means that, even with available grants, incentives, and financing options, the return on investment (ROI) for most significant energy efficiency interventions is not worth the disruption to operations.

b) Second, there are data issues around energy consumption. Absent a useful baseline, it is difficult to calculate the net benefit of any energy efficiency initiative.

c) High initial costs to efficiency and long payback periods (related to the electricity cost factor), means that the results may not be worth the cost.

d) Obstacles to the uptake of efficiency-related technologies in industry include the nascent state of the regulatory regime, unfavourable market conditions, and financing barriers/split benefits (the entity making the efficiency is not always the entity that reaps the benefit).

e) Related to market conditions, legacy industrial assets past their design life may be too old to benefit from efficiency interventions such that it may be better for the firm to idle them. This has been the case in recent years in Trinidad and Tobago as older, less efficient and smaller petrochemical plants have been permanently mothballed.

f) Finally, the rebound effect – counter-intuitively, the switch to more energy-efficient modes of operation may lead to plants being run for longer periods.

These challenges are not insurmountable. Barriers to energy efficiency can be overcome through:

- Financing interventions: government incentives, tax credits, low-interest loans, and Super ESCOs ('energy efficiency as a service' models to offset upfront costs)

- Alliances with service providers to ensure implementation of energy efficiency upgrades in industrial plants

- Continuous improvement of processes and strategy with a focus on energy efficiency

- Reduction of energy subsidies (so that markets can send the appropriate signals) while safeguarding the industries (and populations) most vulnerable to changes in the status quo.

Overcoming the barriers is not a quick process. Effecting improvements and quantifying the benefits of energy efficiency changes can take time. That said, when done properly, the process can, and does, pay off.

Regarding Trinidad and Tobago, the country continues to try to balance the most effective use of its gas reserves with the need to manage an effective energy transition. Part of that effort involves minimising energy consumption and enhancing energy efficiency, which in the industrial sector is a core element of sustainability and competitiveness.


National Energy

NGC GROUP QUARTERLY HIGHLIGHT REEL

COMMERCIAL AND OPERATIONAL HIGHLIGHTS

Through its subsidiary NGC E&P Investments Limited, NGC signed two Exploration and Production (E&P) Licences with the Ministry of Energy and Energy Industries (MEEI) for 20% participating interest in both the Charuma and Cipero onshore blocks. NGC will work collaboratively with the operator – Primera Oil and Gas Limited – in the exploitation of the acreage within these blocks.

On July 24th 2024, the MEEI announced the signing of the Cocuina Field E&P Licence. NGC Exploration and Production Limited (NGC E&P) – a wholly owned subsidiary of NGC - and bp Exploration (Caribbean) Limited (bpECL) have been named as co-licensees. The granting of the Cocuina E&P licence will now enable the joint development of the cross-border Cocuina–Manakin gas field – one of three cross-border reservoir fields that straddle the maritime (international) border between Trinidad and Tobago and Venezuela.

During the month of July, National Energy executives visited Curaçao to strengthen existing partnerships and explore new areas for collaboration.

- NGC welcomed the announcement that upstream operator Shell has taken Final Investment Decision (FID) on the Manatee project, an undeveloped gas field in the East Coast Marine Area (ECMA) of Trinidad and Tobago. Manatee is slated to start production in 2027. Once online, the field is expected to reach peak production of approximately 104,000 barrels of oil equivalent per day (boe/d) (604 MMscf/d).

- On August 22nd, NGC commemorated its 49th anniversary. The milestone was celebrated with an employee event.

- August 31st marked the end of Mr. Mark Loquan's eight-year tenure as President of NGC. Mr. Edmund Subryan will serve as interim President until a successor is appointed.

LEADERSHIP COMMUNICATIONS AND STAKEHOLDER ENGAGEMENT

A delegation of senior executives from Ghana's National Petroleum Authority's (NPA's) Unified Petroleum Pricing Fund (UPPF) Management Committee was hosted at NGC's Orinoco House in Point Lisas in June. The UPPF Management Committee participated in a working visit to gain insights on Trinidad and Tobago's energy industry, to help meet objectives for achieving an efficient petroleum supply chain in Ghana.

GREEN AGENDA

On 15th July, National Energy initiated its third Super ESCO (Energy Service Company) project by commencing an energy audit at Trinidad and Tobago National Petroleum Marketing Company Limited (NP). This follows the signing of a Memorandum of Understanding (MOU) between the two entities in May, paving the way for an energy audit of NP's facilities.

- The NGC Green Company Limited (NGC Green), the newest subsidiary of NGC, reached a significant milestone at the end of May 2024 when CNG sales hit 2.341 million litres, the highest monthly sales in the company's history. This marks an 8.3% increase from the previous month and is 5.3% above the monthly budget.
- National Energy, on behalf of the MEEI, completed the installation of three electric vehicle (EV) charging stations; eight LED lights, and 29 solar-powered LED carpark perimeter lights at Queen's Hall. The new infrastructure at Queen's Hall will support the growing community of electric vehicle owners in Trinidad and Tobago.

CSR AND SUSTAINABILITY

The NGC/National Association of Athletics Administrations of Trinidad and Tobago (NAAATT) Championship Games were held in June, and provided an important platform for athletes to prepare for international competitions being hosted later in the year.

NGC encouraged financial literacy amongst Tobago's secondary school students through its sponsorship of the Wizdom CRM Inter-regional Sustainable Stock Market Game. NGC came on board in Cycle 7 to provide an opportunity for 300 students from Bishop's High School Tobago, Scarborough Secondary School, and Signal Hill Secondary School to develop real-life financial investment skills. Each student received a virtual portfolio of USD $25,000, enabling them to learn how to budget, save, and invest in a simulated environment mirroring the stock exchanges of Guyana, Jamaica, Trinidad and Tobago, and the US.

On 7th September 2024, Phoenix Park Gas Processors Limited (PPGPL) formalised the handover of advanced diagnostic equipment to the Ministry of Health, Trinidad and Tobago, as part of PPGPL's special Gift to the Nation. This included a cutting-edge MRI machine donated to the North-West Regional Health Authority (NWRHA), which will greatly enhance cancer diagnosis and treatment for the public.

NGC partnered with the Ministry of Sport and Community Development in 2021 to support the La Brea Committee for Sustainable Community Development (CSCD). Born out of the National Policy on Sustainable Community Development, the La Brea CSCD aims to foster multi-sectoral development through a bottom-up approach, allowing the community to actively lead and directly participate in its own development. In 2023, the Committee came together to conceptualise and implement the La Brea Economic Development Day, sponsored by NGC. The event included a Business Pitch competition; skills bank registration; job readiness workshop and an entrepreneurship exhibition.

The 2024 edition of the Secondary Schools Football League (SSFL) was launched in August. NGC is a major sponsor of the league's Premiership games.

- National Energy hosted a Webinar entitled "Agrivoltaics – A Sustainable Option for Trinidad and Tobago". The webinar aimed to raise awareness of an innovative Agrivoltaics project concept proposed by National Energy's Sustainable Energy Development (SED) team in 2022.

One Moment Please

TO REFLECT ON THE BEAUTY THAT SURROUNDS US HERE IN TRINIDAD AND TOBAGO

Port of Spain, Trinidad at night